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With The Editor

The Work of Weston A. Price

IN 1939, Paul B. Hoeber, Inc. of N. Y. published an epochal book written by Dr. Weston A. Price, called *Nutrition and Physical Degeneration*. Dr. Price, a famous dentist of Cleveland, Ohio, was appalled at the wretched condition of civilized man's teeth. Between 25 and 75 per cent of Americans not only suffered seriously from dental caries but the condition reflected itself further in a deterioration of their facial and dental arches. The poor diet of our modern age, in other words, is gradually bringing about a poorer bone structure of the jaw and face, a prominent example of which is the receding chin.

Since it was known that most primitive races had a high immunity to dental caries Dr. Price set out on a world-wide tour of investigation which took in Switzerland, the Hebrides, Alaska, Canada, Africa, Asia, Australia, New Zealand and South America. He flew over Australia in an attempt to seek out primitive aboriginal groups. He underwent severe hardship and always the answer was the same. Where the group was cut off from civilization and ate a simple primitive diet the dental condition was almost perfect. Where contact had been made with civilizing influences, and the civilized diet, even in the first generation there began a destructive process which ended up in rampant tooth decay and a lower mental acuteness.

Dr. Price, as his book continually shows, is aware of the importance of proper soil culture. Some of the primitive groups he studied "have continued to thrive on the same soil through thousands of years; our American human stock has declined rapidly within a few centuries, and in some localities within a few decades. . . No era in the long journey of mankind reveals in the skeletal remains such a terrible degeneration of teeth and bones as this brief modern period records. Must Nature reject our vaunted culture and call back the more obedient primitives? The alternative seems to be a complete readjustment in accordance with the controlling forces of Nature."

It is a noteworthy fact that these primitives use no chemical fertilizers, although Dr. Price does not mention this in so many words. It is rather unfortunate that he was not acquainted with the work of Sir Albert Howard before he embarked on this important undertaking, but he *was* aware that our modern agricultural methods are gradually destroying the fertility of our soils and he devotes eleven pages of his book to discussing "soil depletion and plant and animal deterioration." He

knows the value of organic matter in agriculture. For example when discussing the two summers he spent in the Loetschental and other isolated Swiss valleys he says, "And great care was used to carry back to the soil all of the enrichment. This, of course, is a process that is efficiently carried out in many parts of the world today. In this manner extensive depletion of the minerals required for food for animals and human beings may be prevented. Their practice is in striking contrast to that in many of the agricultural districts of the United States in which the minerals are systematically shipped from the land to the cities, there to be dissipated to the ocean through the sewerage system. Among many primitive races there is some attempt to preserve the fertility of the soil."

Price describes how the soil in this country, due to high-pressure agriculture, is gradually losing its fertility. He visited a rancher who controls over 50,000 acres and who told him that formerly each hundred cows would yield annually between 93 and 95 calves, all of which would become breeders. Of late he was getting only about 45 calves per hundred cows, and of these only ten or eleven would eventually be used for reproductive purposes. Price found also that human mothers of today were not as fit physically to have children as their grandmothers were.

The director of the Department of Agriculture for the State of Ohio told Dr. Price that it would cost about fifty dollars an acre to replace the phosphorus that had been lost to the soil in the last hundred years. Price says in this respect, "Recent data indicate that if sufficient phosphorus in a form easily available for plant use were supplied to the land at once, it would kill the plant life; it must be provided in a form in which by a process of weathering it is made slowly available for plant utilization." He is probably talking about the use of superphosphate, which is a strong chemical. When he refers to phosphate in a form that would become available slowly he means phosphate rock which is a safe soil amendment. Good compost is the best of all. For large farms sheet composting is a practical method and saves the work of making heaps.

Dr. Price who was convinced that dental caries stems from a deficient diet, began to experiment in his own laboratory. He discovered that milk might have a high content of cream and butter fat and still be low in vitamins. He found further that in the commercialized production of butter the dairies have worked out a ration for the cow which results in a hard butter which stands up under the rigors of shipment. They are not concerned with vitamines. He found further that butter of highest vitamin content was produced when the cow was feeding on young, fast-growing pasture plants, in the spring and therefore advocated that butter produced at this season be placed in storage and utilized for the rest of the year.

Dr. Price found that where cows fed on a pasture consisting of young wheat and rye grass as well as oats and barley grass as against the usual plants such as clover, timothy, alsike and alfalfa, he obtained butter of the highest vitamin content. In feeding experiments with his patients he was able, with the use of this high vitamin butter, not only to arrest caries but to greatly improve their general health. Some of the cures he effected were truly sensational.

Here is an example: "A minister in an industrial section of our city telephoned me stating that he had

just been called to baptize a dying child. The child was not dead although almost constantly in convulsions. . . . The boy was badly emaciated, had rampant tooth decay, one leg in a cast, a very bad bronchial cough and was in and out of convulsions in rapid succession. His convulsions had been getting worse progressively during the past eight months. His leg had been getting worse progressively during the past eight months. . . . No healing had occurred. His diet consisted of white bread and skimmed milk. For mending the fracture the boy needed minerals, calcium, phosphorus and magnesium. His convulsions were due to a low calcium content of the blood. All of these were in the skimmed milk, for the butter-fat removed in the cream contains no calcium nor phosphorus, except traces. The program provided was a change from the white flour bread to wheat gruel made from freshly ground wheat and the substitution of whole milk for skimmed milk, with the addition of about a teaspoonful of a very high vitamin butter with each feeding. He was given this meal that evening when he returned to his home. He slept all night without a convulsion. He was fed the same food five times the next day and did not have a convulsion. He proceeded rapidly to regain his health without recurrence of his convulsions. In a month the fracture was united." Six weeks later he was playing around like a normal boy and when the preacher came to visit found him climbing up the roof-spouting of the house to the second floor.

This is a remarkable book of over 400 pages with at least a hundred photographs and it is a most powerful indictment of the use of chemical fertilizers in undermining our nutrition. Unfortunately it is out of print but you might loan the book from your local library.

It is a sad commentary on our commercialized methods of producing and selling foods, that rarely is any attention given to its health-giving qualities. The farmer, the dairyman, the packers, the orchardist—all scan their profit and loss sheets in a more or less cold-blooded business fashion, without making a place, howsoever tiny, to that intangible item, the health of their customers. In a way they are not entirely to blame, because their adviser, the Government, has not taught them that it is possible to improve the health-giving qualities of their crops.

There are pure food laws but no restrictions as to farming methods except regarding sanitation in the dairy and pasteurization of milk. There are many reprehensible practices which should come under legislative ban. For example there is a so-called potato-king who grows hundreds of acres of the tuber without using an ounce of organic fertilizer. He buys his chemicals by the carload. And such potatoes are fed to growing children! There is the milk factory I know of in New Jersey, just across the river from New York City, which has hundreds of cows and not an acre of pasture. The cattle are fed on purchased feeds.

A beginning must soon be made to protect the public if we want to remain a grade-one nation. There are little stirrings. Some of the farmer-readers of Organic Gardening are actually putting Sir Albert Howard's ideas into practice. The methods will slowly spread. At the beginning premiums must be paid for such food. Eventually there will come a drastic change in farm practice. Let us hope that this generation will see it.

J. I. RODALE

Natural v. Artificial Nitrates

By SIR ALBERT HOWARD, C. I. E., M. A.

IT has often been claimed by the manufacturers of artificial fertilizers that their factory-made products are in every respect equal to the mineral elements that are found in natural manures and in the soil itself. That they should believe in their own products is to be expected. If this were not so, then they could only be regarded as profit-grabbing hypocrites carrying on criminal activities. And yet is it not reasonable to suppose that man, by his very nature, is incapable of producing with exactitude the natural elements of the earth? If he could in this true sense of the word 'create', then he would cease to be man and be on an equality with the Creator of the universe.

Modern science has progressed so far in determining the composition of material things that man has almost imperceptibly drifted into the belief that he has only to combine certain chemicals in certain ways to reproduce exactly the natural materials needed in daily life. But, on the other hand, does not the man-in-the-street instinctively distrust the concoctions of science? It is doubtful whether the average man will ever believe that synthetic rubber, for instance, can be in every respect as good as real rubber from the forest. Such scepticism is inherent, and it is well that it should put us on our guard against the too easy acceptance of the results achieved by scientific skill.

The *New English Weekly* of March 29th 1945 supports this view, quoting the case of natural as compared with artificial nitrates:

'It is always good to see the difference between natural and laboratory products emphasized, in recognition of the imponderable elements with which Nature endows substances, which can by no scientific skill be added to the synthetic product. The case in point is that of nitrates, and the Report emanates from one of the U. S. A. universities. It states:— "natural nitrates have something that the artificial lacks, and there is no completely adequate substitute for it in the field of agricultural fertilizers. Chilean nitrate contains small amounts of vital impurities such as magnesium, iodine, boron, calcium, potassium, lithium, and strontium, which are to plants what the vitamins in fresh foods are to human beings. It has been found that natural nitrate does something that makes apples stay on trees; that it does something to corn that results in better live stock fattened on it; that chickens raised on nitrated feed lay better eggs of greater fertility. It is just as impossible to make artificial nitrates that duplicate natural nitrates as it is to make synthetic sea water that contains all the elements of natural sea water."'

It is just here that the danger of scientific research lies. No scientist has ever produced, or is ever likely to produce, life and the natural universe holds mysteries that will never be reduced to a formula or manufactured in the laboratory. The crucial test of real scientific achievement is whether it recognizes and respects the supremacy of Mother Earth, or ignorantly attempts to substitute the false for the true. A. H.

Gardening In North China As I Saw It

By K. M. GORDON

WE arrived in Tientsin, North China, in mid-November 1904. A few days later we started by houseboat for Paotingfu, about 90 miles up the river, a journey of five or six days. The farm crops were all harvested. The country was bare and drear. Occasionally we passed a village on the riverbank. Adjoining these villages were vegetable gardens. The unharvested vegetables that appealed to me were the wonderful cabbages. I soon had the privilege of enjoying these cabbages, crisp, tender and sweet. As the years went by we learned to appreciate their food value. As we became more acquainted with the Chinese way of living we saw what an important place cabbage was in their diet. But, we must not start on diet.

Just before we entered the gate of our compound at Paotingfu, where we were to spend the winter studying the Chinese language, we passed some ill-smelling manure piles, RIGHT BY THE ROADSIDE! Before spring we were to learn something of how the Chinese made compost.

The next morning we were surprised to see a man sweeping up the leaves that had fallen from the trees during the night. They went on a pile, of what I at first thought was only rubbish. It was rubbish, but rubbish with a purpose, not to be burned, but to go into the compost pile. The Chinese farmer or gardener, in North China, uses no raw manure or vegetable matter as fertilizer. IT IS ALL COMPOSTED FIRST.

In the spring we saw how this compost was used in the garden. The soil was first dug up and left in a fine condition, with a hoe made especially for the purpose. This hoe consists of a heavy piece of iron, about six inches wide and a foot long. The handle is about 6 feet long. An iron loop at one end of the blade holds the handle at right angles to the face of the blade, but before the handle is inserted the blade is bent at an angle of about 20 degrees, toward the operator. In use the operator raises the hoe several feet above the ground and brings it down with a quick pull toward him, which buries it into the ground up to the angle in the blade. A twist of the wrists turns the earth half over. The operator treads the ground as little as possible. It is remarkable how *alive* the soil appears, not dead like so much of our soil that has been worked with a tractor and such a large variety of farm implements.

Most vegetable gardens in north China are irrigated. Most of the water is drawn by hand from streams or wells with odd shaped, willow basket like buckets. Narrow ditches run the length of the gardens. On either side of these ditches the vegetables are planted in shallow checks about three feet wide. Conditions determine their length. The top soil is scraped from the bed to one side of the first check and mixed with compost. Most of

it is then carefully spread over the bed of the check and the check flooded with water. The seed, previously sprouted, is then sprinkled over the bed, and covered with a thin cover of the remaining mixed soil. The bed is again flooded with water. From then on it is irrigated frequently. This is to kep the soil from baking and to keep out insects.

Large areas are seldom planted to only one kind of crop. Frequently each successive check is planted with vegetables different from its neighbours. They have a system of mixed planting, which I am sorry to say that at that time I did not consider of enough importance to seek to learn their reason for doing. They keep something growing in their gardens most all year, even in frost and snow. For these cold weather crops the levees of the checks are much higher than usual, serving as sides for "cold frames" to support thick mats made of millet straw, which are spread over the beds before the sun goes down, to retain as much heat as possible, and to protect the plants from the cold of the nights. The beds of these winter gardens extend lengthwise, east and west. North of the north levee of each bed is arranged an artificial windbreak, made of kaoliang stalks, a non-saccharine sorghum which grows ten feet or more tall. The top of this windbreak is slanted toward the south so as to allow the sun to shine on the whole of the beds both north and south of it.

The root vegetables are seldom planted in rows. The sprouted seeds being scattered over the bed of the check. The beds are not hoed and cultivated as we handle our gardens. Frequent irrigating keeps the soil soft. The levees serve as paths from which the beds are weeded by hand. The weeds being picked up and carried to the compost pile in baskets, usually by the young children of the family.

Some will say, Oh! how much hard work! Yes, HARD WORK. Few of up Americans know that kind of hard work, but China has survived through thousands of years. I trust that we may never come to their condition, but if we do not do so it will be because we soon begin handling our soil and crops in quite a different manner from what they are now being handled in America. ORGANIC GARDENING is part of the needed change.

Worm Plow

I SAW recently, in *Business Week*, a photograph of a new rotary plow which strikes me as a fine invention. It seems that the inventor modifies the old disk plow by substituting for the disks something like the worm in a sausage grinder and then rotates this worm by means of a motor. Thus he can plow nine inches deep or one-half inch deep and there is practically no draw bar pull. This plow may be the answer to the organic farmers' prayer and may solve the most serious problem of the small farmer who can pull this plow with a team of horses and nevertheless plow a lot of land.—From a letter by Dr. L. W. Blau.

Hints For The Victory Gardener

This is the thirty-third of a series of articles by this author dealing with the cultivation of ordinary vegetables.

PE-TSAI OR PAK-CHOI?

By ROGER W. SMITH

WHEN you grow it you will likely ask yourself the question, just what is Chinese cabbage? You have a packet of seed marked Pe-Tsai. If you bought that seed from a reliable seedsman it will doubtless be viable; with proper care the plants that spring from it will form conical heads, just as illustrated on the packet. But is it Pe-Tsai? Is Chinese cabbage a *brassica*—a true cabbage—or is it a member of the mustard family?

It probably isn't an overstatement that these are questions that long confused expert gardeners. Generally, Chinese cabbage is considered a development of the mustard plant. Some varieties have been listed as Chinese mustard. Yet Pak-Choi was long known as *Brassica sinensis* and considered a true cabbage.

You will most likely sow the Pe-Tsai type which forms a head some fourteen inches high in about seventy-eight days rather than Pak-Choi, which is large and loose-leafed. Chihli, usually forms shorter but heavier heads than Pe-Tsai. Wong-Bok, a quick growing type, also forms a short, thick head about ten inches tall and seven inches in diameter.

In gardens situated in the northeastern States few vegetables are more likely to succeed as a fall crop than Chinese cabbage. It thrives in cool weather, as do many leafy vegetables. Hot, dry weather slows up its growth and encourages the plant to go to seed, instead of forming a compact leafy head.

For the production of fine heads of Chinese cabbage the place where the plants are to grow should receive careful preparation. The soil should be rich, deep, and an adequate supply of moisture heavy with natural plant nutrients should be easily and steadily available to the roots of the plants. Conditions under which ordinary cabbage thrives are often satisfactory. But to form an ideal bed, a good plan is to dig in, not too deeply, a heavy layer of mature compost humus. If you are short on good compost, a fifty-fifty mixture of compost humus and well rotted manure will have to suffice.

Chinese cabbage, much like ordinary cabbage, is a gross feeder demanding much moisture. If ample organic matter is properly incorporated in the seed bed the problem of moisture usually takes care of itself. The plant heads during cool, rainy, Autumn weather and little watering should be necessary except perhaps when the plant is very small, during a dry spell in late July or early August.

Seed should be planted around the end of July to produce a satisfactory fall crop. Care should be taken, however, not to sow the seed too early or to space the plants too

closely. The seed should be covered with half an inch of sifted compost humus, be well watered and properly firmed. The plants should stand about sixteen inches apart in the row. A half an ounce of good seed should be sufficient for about one hundred feet of row and yield about sixty-five mature heads.

Too early sowing, and spacing the plants too closely, will both encourage "bolting", that is the formation of a seed stalk instead of a head. Even when small, plants will "bolt" if conditions warrant it. In

Chinese Cabbage Chi-Hi-Li

this matter of "bolting" and failure to head, you will find it a convenient guide to remember that the heading of a leafy plant is brought about for a very definite purpose and under certain fairly definite conditions. Generally, the plant that heads reaches maturity too late in the season to form seed. It stores up a heavy reserve of food material in its leafy head, much as a root plant stores up nourishment in its fleshy root, and for the same purpose; to carry it through the winter and to serve as a reservoir of strength to be drawn upon in going to seed the following season.

Leafy vegetables form heads best during cool, shadowed days. Some good gardeners succeed in heading up Chinese cabbage and lettuce during summer months by providing partial shade in some easy, temporary manner.

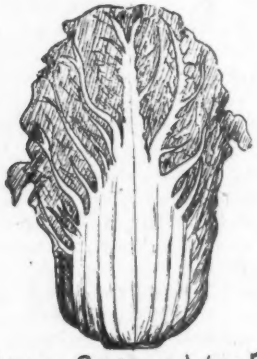
Besides the conventional "cos-lettuce" type of Chinese cabbage there are many types, large loose-leafed varieties, that deserve to be better known. Typical is the huge Hagaromo, the Giant Shuntang, and the Yellow Shuntang, all of which are more or less coarsely savoyed, have large fleshy, heavily-ribbed leaves. One half ounce of their seed, broadcast over an area forty by sixty feet, has been known to yield over *three tons* of edible greens. The ability of this plant to produce prolific growth was noted as long ago as the days of the Ming Emperors when it was highly recommended for "supporting life in times of scarcity".

The nomenclature of the various types of Chinese cabbage is as baffling as its origin. In most catalogs today Pe-Tsai is used to designate a distinct variety. Yet one catalog from the Orient offers more than fifty varieties of Pe-Tsai alone.

Even when you grow it you will probably have difficulty in distinguishing between Pe-Tsai and Wong-Bok although the later is actually a round or ball-headed type. In fact, so wide is the range of varieties, Pak-Choi—a small-leafed, typical "mustard type", is very largely grown for its seeds from which is expressed a valuable oil.

Chinese cabbage types are about as numerous and diverse as the varieties of ordinary "cabbage".

From an inedible herb, wild cabbage, native to the chalky cliffs of western Europe, ancient gardeners evolved such unlike types as the kohl-rabi and the ball-head. It is not unlikely that Oriental gardeners took equal interest in some wild



Chinese Cabbage Wong Bok

plant, perhaps a member of the mustard family, and from this humble beginning developed those fine plants which are now available to you under the general head of Chinese cabbage.

Your little planting of Chinese cabbage will supply you with many fine heads as cool weather approaches. These heads should be cut from their stalks when fully developed. The outer, weather-beaten leaves may be added to the compost heap; the inside leaves may be served as lettuce, shredded for cole-slaw, etc. Boiled, Chinese cabbage is infinitely more delicate and palatable than ordinary cabbage, but the Victory gardener's wife will doubtless be glad to demonstrate these matters to you.

And while the plant matures in the natural organic humus in which it grows, you will naturally watch over it and wonder about it. If a few leaves are left on the root stalk when the head is removed and that root stalk carried through the winter by mulching, will it produce seed the following season much as an ordinary cabbage stalk would? You may even compare the growth and value of a row of Chinese cabbage and a row of ordinary Fall cabbage. Who did the better job, the Oriental gardener cultivating the wild mustard or the European gardener using the wild cabbage?

You may well be satisfied as you harvest many fine, firm, celery-like heads. But did you grow Pe-Tsai or Pak-Choi, or maybe even Cheefoo? And was it really cabbage?

Fertilizer Residues

SWEET and PEECH of the Cornell Station write in *Farm Research* (April 1945) that tomato seedlings often developed into stunted plants not only because there was a shortage of fertility, but often for the reason that fertilizer residues were excessive. These highly soluble substances make strong solutions in the soil; instead of entering the plant roots, they may draw from the plant the living sap and cause wilting and even death. In applying the organic method no such problem can ever arise.

The Jerusalem Artichoke

By G. L. WITTROCK, New York Botanical Garden

WHILE out with a group of students studying wild plants we came to an established clump of tuberous sunflowers which I identified as the "Jerusalem Artichoke" or HELIANTHUS TUBEROSUS. Explaining the taxonomy of the plant and adding that the genus HELIANTHUS is strictly American in origin, one young student became disturbed by my statement. Why should an American species be labelled with an old world common name such as "Jerusalem Artichoke"? Her challenge was proper, in fact she was anteceded over 300 years by Parkinson, who, in his Herbal published in 1629 ridicules the adopted common English name with the comment that "we in England, from some ignorant and idle head, have called them Artichokes of Jerusalem, only because the root, being boyled, is in taste like the bottom of the Artichoke head; but they may most fitly be called Potatoes of Canada". The name "Jerusalem Artichoke" is now so international, particularly with English speaking people, that correction will be difficult.

Until recent years the name "Jerusalem Artichoke" has been accounted for by most authorities as originating from a corruption of the Italian "Girasole Articiocco", or "Turning-toward-the-sun-artichoke"; unfortunately this explanation is false.

The history of this species is closely related with the early exploration of our eastern United States and Canada. Champlain mentions this plant in the Journal of his 2nd expedition to New France. In his entry of July 21, 1605, he records observing a plant under cultivation by the native Indians at Nauset Harbour on the coast of Massachusetts. Translated from the French, his comments are: " . . . . and roots which they cultivate, the latter having the taste of artichokes". This Journal was not put into print until the year 1613, but tubers were brought back to the Old World in 1607 and cultivated in Brittany, *France*, by members of the Champlain Voyage. They were described by Lescarbot in his Histoire de La Nouvelle France published in 1609, the first actual printed account of the plant. The common name soon given to the tuber in France and Germany was "Topinambur".

Evidence shows that the tuber was introduced into *Italy* in 1616, at least 9 years later than in France, in fact, the original Italian tubers must have been actually received from France. In Italy, the species became known as "Tartufo bianco" which is the common name in that country to this day. It was also called "Girasole del Canada" in 1809, and the name "Girasole" was applied collectively to all sunflowers which is still so used. The tuberous sunflower was never known in Italy as "Girasole Articiocco", the supposed origin of the term, "Jerusalem Artichoke". Perhaps we could uncover something by turning to the Lowlands.

According to records, the tubers were first grown in the *Netherlands* by Hondius Feb. 28, 1613, in a

town known as Ter Neusen. Hondius called the tubers "Artichokes-under-the-ground". Hondius apparently supplied his Dutch friends with tubers and these practical growers exported the tubers into the markets of *England* as products of Ter Neusen. Picture a vegetable man hawking his strange American tubers as "Artischokappeln van Ter Neusen" as they were then known; it would have no selling force. The word Jerusalem was associated with dignity and in those days of the 17th century, it was a most popular name with a true appeal to the ears of the man of the street because of its many connotations. So the hawkers called it as we now know it. It must have been so named in the English markets to account for Venner of Bath publishing in England in 1622 a description of the edible tuber and referring to it as the "Artichoke of Jerusalem", the first time the common name so appeared in publication. The above explanation is the conclusion of many modern authorities. My own opinion on the origin of the name may modestly be recorded as follows: since the tuber was characterized as tasting like artichokes and also highly recommended in recipes in the early days for a soup popularly known as "Palestine soup", the hawkers could easily transpose this use in Palestine soup to Jerusalem soup and then combine this form of use with taste and metamorphose into the common name "Jerusalem Artichoke".

Jerusalem Artichoke (Helianthus tuberosus)

What about the American *Indians* and their uses for the plant? This species is the only North American aboriginal contribution, exclusive of Mexico and Central America, to the vegetable Garden of the world.

The species is apparently native of the upper Mississippi and Ohio Valleys and their tributaries. Tubers must have been carried further east possibly by barter from tribe to tribe into New England and eastern Canada. It was observed in this section of the country by many explorers, who generally made note of its cultivation, but not a word about wild plants. The conduct of the plant under cultivation in the north eastern States and Canada and even England indicates that it is not at home there, since the species may not bloom until October and unless the autumn is exceptionally dry and warm it will not seed. "A skibwan" meaning "raw thing" was the Chippewa name, since the tuber was eaten raw like a radish. The Hurons extracted an oil from the seeds of the plant, the tuber of which they ate raw or cooked. The Onondagos of New York also prepared them according to the general Indian recipes: raw, boiled, or roasted. In Virginia the general Indian name was "Kaischuc penauk" translated as "sun and roots" or "Sunroot", a most suitable name.

The species is a tuberous and perennial form of sunflower of the Compositae family having the familiar bright yellow ray flowers or "petals" bordering a solid central core of disc or fertile flowers that normally develop seeds called achenes, smaller than the popular "polly seeds" harvested from the true sunflower HELIANTHUS ANNUUS. The seeds are rich in vegetable oil not utilized to date as a product. The plants grow bushy, reach a height of 10', have excellent insect and disease resisting foliage, have no spots on the leaves, and no virus problems. The plants occasionally are attacked by stem rot, but the simple removal of these plants from the planting and a 3 year rotation period is a good control and eliminates this condition. In addition, the foliage serves as green forage and even silage for cattle and sheep. It is the tuber, however, that is important to us.

The tuber may be compared to a potato with large eyes and stubs suggesting raised worts; these knobs are the withered shoot bases of the previous season's growth. These starchless tubers are from white to red purple in color, usually as big as a fist, egg shaped or globular, occasionally elongated which is the character of the wild forms, and in general are from 4 to 6 inches long and from 2 to 3 inches thick. The white, yellow, reddish flesh tastes sweetish, somewhat flat, weak and watery though nutritious as we shall note by the analysis. New varieties such as "Portland White" and "Mammoth French White", considered the best, are more appealing in appearance and have a sweeter and more nutty flavor than the wild species. This vegetable is recommended for cultivation in the northern 2/3 of the United States and southern Canada. Cultural factors are simple, practically the same as that for potatoes.

Cork cells appear at times on the easily removed skin, which unfortunately is not thick enough to protect the tuber in storage as in the case of our common potato. This is a warning that must be kept in mind in the care of the tuber at harvest time in November if the region of cultivation is too cold to permit leaving the tubers in the ground covered with straw and dug up for use only when needed. One stem may develop from 15 to 20 lbs. of tubers and it is this prolific habit of production that makes the tuberous plant valuable. Never harvest before November because tuberization develops late, but once the tuber buds are started, they expand quickly. Tests and experiments have been conducted to induce tuberization with some success. Since a short growing season never permits the late flowering bloom to produce seed, small tubers should be segregated and returned to the soil as "seed" for next year's crop. Exposed to the air the tuber will soften or easily freeze and spoil. The tubers can be stored in sand or frost free cellars like that for the storage of potatoes or in a temperature between 32-35 degrees with a high humidity. The presence of inulin lowers the freezing point of the tuber thus serving as a form of protection if evaporation is prevented. This leads us into the chemical content of the tuber.

The chemical analysis of the tuber is as follows:

Fresh tuber	
79. %	Water
1.89%	Nitrogenous substances
.18%	Fat substances
16.4 %	Carbohydrates
1.25%	Vascular tissue
1.16%	Ashes

Food substances	
12.92%	Inulin
1.72%	Reducing sugars
.80%	Pure protein
1.89%	Nitrogenous substances

The inulin content was observed by Braconnot in 1824. Since 12.92% inulin is present in the fresh tubers, it is interesting to note that the dry tuber has a test of 60.43% plus 9.23% of nitrogenous substances. To compare the tuber with the established potato we find that the harvest is about 20% less, while in calories it is rated at 380 to 385 calories for the potato. The tuber surpasses the potato by 12% in nitrogenous substances, 50% in fats, and 10% in minerals. In fact, it is claimed that the species fixes nitrogen as in the case of pea and beans, thus there is definitely a production of vitamin C probabilities. The vitamin content has not as yet been tested.

The above food analysis of the tuber indicates its value and when compared to that of the potato, this "cinderella" vegetable should be considered seriously as a food tuber since it grows almost as a weed in the poorest of soils, can be used for live stock, for human food, the manufacture of numerous dietary products particularly for diabetics, an excellent source for levulose sugar, and finally a raw product for the manufacture of alcohol. It grows in all soils, whether light, loose, sandy, or too poor for potatoes and beets; but it cannot tolerate wet or too dry conditions, prefers a sunny and wind protected section, a warm summer, sunny fall, and typical wheat climate. Its weedy nature has been criticized by the comment that once established it is hard to eradicate, like a poor relative. This condition can easily be controlled, if desired, by simply resorting to excess cultivation for a season thus preventing tuberization; seeds are no problem.

Being a rampant grower, the plant exhausts the soil quickly, thus decomposed stable manure 8-10 ton per acre plus natural compost will replenish the soil after rotation has been practiced. It must be remembered that the plants are most sensitive to fresh unrotted manure and particularly to chemical fertilizers.

For field crops they should be planted 30 inches apart in rows 3 feet apart and the "seed" from 4 to 6 inches deep. They require no labor beyond planting, occasional hoeing between the rows and final harvesting. An average harvest is considered to be from 10 to 12 tons; one exceptional record reports 20 tons.

One of the original recipes of the 17th century was to boil the tuber till tender, and after peeling, slice or stew with butter, wine, and spices; the same "cook book" suggests baking it in pies with marrow, dates, ginger, raisins, and sack. In general the modern preparations may be listed:

1. Eaten raw.
2. Sliced into mixed salads.
3. Cooked and served like potherbs.
4. Baked or boiled like potatoes, the main ingredient in casserole dishes, topped off with melted cheese.
5. Adding spiced boiling vinegar, thus making a savory jar of pickles.
6. Cooked as a thickening base for puree.
7. Raw tuber peeled and sliced and butter and salt added, and then set over a flame and steamed (no water added).
7. Excellent as fritters.
8. Sliced and cooked with fish and meat stews.

9. Boiled in milk and seasoned to taste.

10. Boiled in water and added to potato salad.

The above recipes have been suggested to justify our plea and recommendation of this plant as a vegetable, as a food plant for man, not just for cattle and sheep as seems to be the case in America. Since this plant was observed cultivated in the Loocho Islands, a group of Japanese Islands northeast of Formosa soon to come under our control, the plants may find their way into the cook pots of our army kitchens and thus acquaint thousands of our men with the tuber. If they like the somewhat coarse, sooty, earthy, and wild "woodsy" flavor of the raw tuber which becomes really more palatable when cooked, and have acquired the taste for them, they will teach us to make more use of our own American species and give it a chance to become an addition to our vegetables of the day.

Gardening Devices

Tomato Trellis

THERE ARE A FEW hundred devices which fit only one season of the year, but there are only twelve issues of our magazine. The pictures are therefore apt to be out of season; but this does not matter; for winter is just the right time to prepare for the spring. And if you are now canning your tomatoes and put up gallons of delicious juice, you may wish to grow even more tomatoes next year. A removable trellis may come in handy, because you can use discarded strings on it to support the growth of next year's tomatoes.

Lloyd George's Potatoes

THE *New York Times* some years ago carried a picture of Lloyd George supervising the work of potato planting. We were struck by the fact that the old Welshman had the girls plant whole potatoes, not cut-up pieces. This was the first time we associated the aged statesman with potatoes; in fact, we derived from that picture our first impetus to plant uncut seed. We have followed the same practice ever since.

More recently, *The Baptist Times*, had another potato story of even greater significance to organic gardeners. A. Porritt recalls a country hike with Lloyd George: "He set a walking pace of four miles an hour, until, once, breathless in trying to keep up with my host, ten years my senior, I begged him to have a little mercy on an ageing man. I asked him how he accounted for his amazing virility. 'Because', he replied, 'I absorbed so much iodine in my childhood. Our's was a poor man's home, and we almost lived on potatoes. One of my regular Saturday jobs was to take a handcart to the shore and bring back a load of seaweed to be used as manure for our potato patch. Seaweed is rich in iodine and the amount of iodine I had in my Llanystumdwy boyhood has served me ever since'."

It is a fact that potatoes like other tuber and root crops take up minerals from the soil quite readily; elements, such as iodine, which may not be essential in great quantities to the plant are nevertheless stored in its tubers. This is one reason why some chemical fertilizers are so dangerous. Russell of the Rothamstead Experiment Station, founded on the proceeds of the chemical fertilizer industry, showed over a decade ago that potatoes were so ready to store chlorides in their tubers, which reduces their keeping quality, that he had to come out against the use of ammonium chloride in fertilizing potatoes. It seems then, if the bushy-haired Welshman is right, that putting the right organics into the soil will pay dividends in health and vitality.

Temperature Problems

MANY PLANTS germinate only at a low temperature; apple seeds and most conifers even have to be exposed to freezing; others again, like corn and cucumbers, betray their Southern origin by their love of warmth. But even potted plants are often very sensitive to temperature changes; the water should be at room temperature, not taken from the faucet, because otherwise fungi and diseases are encouraged. Mr. Graves of the *Massachusetts Horticultural Society* calls attention to this fact in regard to Leaf Spots of African Violets. "In brief," he recollects from the writings of Ohio State University floriculturists, "the trouble is usually caused by watering the plants with water which is lower than room temperature."

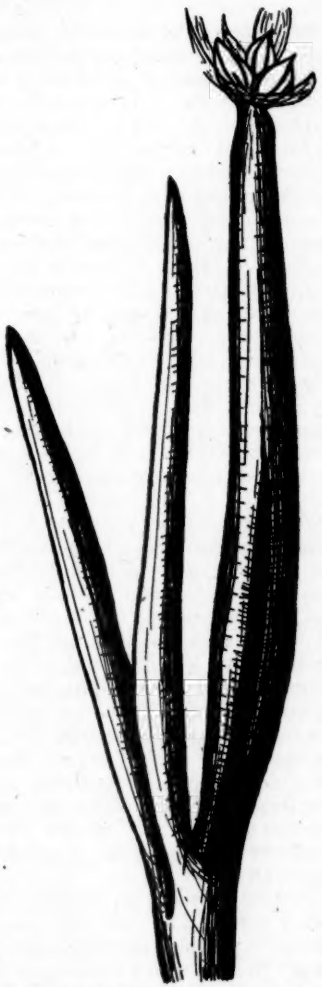
A Modern Herbal

By ROBERT O. BARLOW

VI Onions. VII Fennel

ALL herbals mention chives and leek, most also garlic and onions; yet somehow, these plants of the onion clan do not quite fit in with fennel, mint or angelica; nevertheless, they are used medicinally; they are indispensable to the cook who seeks flavoring; and they are welcome to those of us who like raw food. What can be better than a piece of whole-wheat or dark rye bread with butter, sprinkled with fresh chives from the garden? Nothing but cottage cheese with chives and caraway seeds. Only non-curled parsley can take the place of chives; but that is of an entirely different taste and effect.

Perhaps our reluctance to deal with these members of the onion or lily family in connection with herbs is their bulbous character. A bulb is very much the same as a tuber, a storage root or a tree trunk as far as the plant is concerned: It serves as a reservoir and allows the plant to pass through unfavorable periods of cold or heat in safety; as soon as the spring rains arrive, the bulbs send up their shoots and cover the plains as I have seen in South Africa and Palestine; these "lilies of the field" supplied the great master of Christianity with a splendid symbol of economy. But while the lily plants neither sow nor reap, they all are excellent storers of nutritive substances. An analysis of onion bulbs reveals for example that wide range of mineral content which bespeaks great variability in a plant: In a million parts of bulbs there may be contained copper: 5-24 parts, iodine: 46-479 parts, iron: 48-265 parts, manganese: 2-96 parts. All tuberous and root crops share this ability to store essential elements for future use.



Top onion (*Allium cepa var. viviparum*)

Onions may be a coarse group, but they are interesting enough

nevertheless. We need not go into their use in the kitchen, because all cooks know enough about that aspect. But the botanist and the folklorist have enough to contribute to fill a book. When Thomas Mann wishes to convey the slow motion picture of an Oriental caravan in the days of *Young Joseph,* he has the newly acquired slave make up one amusing little good-night greeting after another. But what does the master of this caravan handle? Among the products mentioned, there are onions. The onions were first grown in the Orient. Vavilov, an amazing Russian plant researchman, wrote a paper on botanical geography in 1935, in which he says that our common onion originated in central Asia, India, South Russia, Afghanistan, Asia Minor and the Mediterranean region, with another variety developing in China. The two great Frenchmen Lamarck and DeCandolle enumerate a few dozen onions from Southern France alone. This always reminds me of my great old friend, the Tulip breeder Dykes, who tried to classify tulips, but found so much variation in all his specimens that he never came to a conclusion; all growers and breeders of bulbous plants can appreciate this difficulty because they too know how variable all bulbous plants are.

Looking at the pharmacopia, we find no less than ten lily plant genera supplying us with official drugs: *Smilax,* which renders sarsaparilla root; *Colchicum, Scilla, Veratrum, Asagraea, Convallaria, Trillium, Allium, Aletris, Chamaelirium*: then there are of course the close relations, such as *Aloe,* which are frequently used by the druggists. Some of them are so poisonous that ancient writers made considerable to-do over them: "First you cut with your sword a circle around a plant of veratrum," wrote Pliny, "then you turn toward East, implore the Gods that they permit you to take the plant, and watch the flight of the eagle." The recipe for harvesting goes on much longer and shows how dangerous this plant seemed. Another lily plant, *Schoenocaulon officinale,* is the source of a hair water used in Europe for the destruction of lice. We mention these various uses because onions have so many friends and enemies; with some, they agree; with others, they fight.

Botanically they are not adequately classified because they have not been adequately studied even today. There are spring onions, also called Welsh onions (*Allium fistulosum*), the little white pearl onion (*Allium ophioscorodon*), which is often pickled; the shallot (*A. ascalonicum*) which forms many bulblets breaking at the base; the common onion (*A. cepa*) which varies not only as to taste and color but considerably as to light requirements, the so-called photoperiodism. Photoperiodism is the word which signifies a plant's reaction to light over a period of time; the gardener knows that planting Chinese cabbage too early in the year will cause them to flower rather than to make leafy growth; this is due to the light stimulus, for this vegetable completes its growth cycle during the shorter days. Other plants have in them hereditary qualities which make them flower during the long days, like radish, spinach, lettuce; while again others bloom only when the days get shorter again, for instance the Cosmos and many other composite flowers. This range is utilized by breeders and indicates at least different geographical origins for the common onions; more important yet are the reproductive habits. Some onions divide in the bulb, rarely going to seed; these are simi-

lar to shallots and usually called multiplier onions or potato onions; then there is the top onion (*A. viviparum*) (see picture) which produces little onions instead of flowers, an occurrence that precludes sexual reproduction entirely. There are similar lilies, *Lilium bulbiferum*, and other plants like *Dentaria bulbifera*, which has bulblets in the leaf axils; but the inability to reproduce by pollination and flowering is so exceptional an event, even if it occurs also in *Yucca* and a few more plants with infertile flowers, that it indicates quite an adventurous past for the species.

The growing of onions has become quite a commercial venture, but the herb gardener is apt to have his green onions regardless of pests and fungi; a tender stalk of onions cut and spread over the scrambled eggs or eaten with whole rye bread and butter is a treat to the palate, just as a combination platter of lettuce and spinach greens with red young carrots and scarlet or crimson spring radishes would be incomplete to the eye if the slender stalks of green onion with the inviting white bottom bulbs were absent.

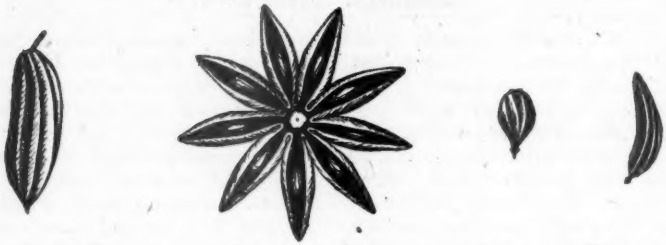
VII. Fennel

Fennel (*Foeniculum*) is a Latin word that means "little hay"; probably this name arose from the fragrance of hay. It belongs to the umbrella-shaped flower family like parsley and dill, coriander and carrot, cummin and anise, as is immediately obvious when you look at the tap root, the lacy leaves, the whole growth habit. Characteristic of fennel is the form of the leaf base: It is not round, but flattened, because the leaves are opposite. This is a growth habit which exhibits itself again in the flattened seed. The *finocchio* occasionally seen in the markets and introduced from Italy owes its existence to this very form of growth: The stalks of this variety are juicy and tender at their base and offer therefore a vegetable dish, not just a flavoring.

The seeds are used for a tea of very light laxative power; it used to be a common remedy for children because it is at the same time a sedative that cures the colics and winds of infants. Fennel has furthermore the power, also exisiting in anise, of loosening hard coughs,

Fennel (*Foeniculum vulgare*)

relieveing colds, and curing inflamed eyes. In Europe some very pleasant candies are made with fennel flavoring. In the old Bavarian and Austrian drug stores, you will find an assortment of hard candies flavored as follows: Onion, althaea, fennel, honey—all of which are used like our horehound or licorice, both for coughs and for pleasure.



Fennel Seed Star-Anise Anise Cummin

How nature sometimes doubles its creativeness is brought home by the starry anise seed which comes from Eastern Asia and is the fruit of a Magnolia shrub or treelet, the *Illicium anisatum*. It is a native of the Philippine Islands. Early in the sixteenth century when the great explorers went first all over the world, the star-shaped seeds were brought to Europe where they were used as a spice in cookies and cakes and for flavoring the anisette liqueurs. This seed has almost the same flavor as our anise and yet, when chewed up blindfolded, will always be mistaken for fennel seed. These flavors are very closely related, though the medicinal qualities of the seeds are not the same. In fact, the Japanese variety of Illicium is without fragrance and even poisonous.

Fennel is easily grown and the seeds germinate readily in the home garden, though the plant is originally of a more Southern origin. I personally never liked the leaves of fennel, but some people enjoy adding a sprig to their green salads, much as others do with borage, some even with dill. But the leaves and stalks do not have the fine flavor of the seed and I had rather chew a few fennel seeds off and on than taste fennel when I wish to enjoy a fresh green lettuce.

Seed Buying

IN A RECENT book the author deplores the fact that his friends buy their seeds in the local hardware store or even in grocery stores where many packaged seeds are displayed. This warning is not in place; every state has rigid seed laws and the federal law is quite powerful and well enforced also; the two or three leading firms which specialize in packaged seed have existed for generations because they produced seed of the highest quality. It is about as unlikely that a Ferry-Morse seed packet should fail as that the sun would rise in the West. These seeds are tested and dated and will not be sold after their time of germination has expired. With fall seed buying around, this false impression of the would-be expert about seed quality should stand corrected.

Over the Fence

by H. K. MEYER

ORRIN HALE of the excellent magazine *NORTHWEST GARDENS* made one of the best quips in recent garden literature: "Trying to grow sunflowers and pole beans together makes me think of the story of the man who claimed he planted onions and potatoes together so that the onions would make the potatoes' eyes water and thus avoid irrigation".

•

"All of the results from greenhouse and field tests indicated that the application of organic matter is the first step in the control of black rot in sugar beets." This statement comes from the Chief of the Department of Plant Pathology at the Ohio station, Dr. H. C. Young, and was printed in *SUGAR* in June 1944. It supports and confirms the principal philosophy of the organic gardeners.

•

Mr. M. O. Howatt of Plover Pond Orchards, Coopersburg, Pa. came by for a chat. He mentioned another orchardist, L. Schreiber, of Zionsville, Pa. who has chickens in his orchard. We were discussing the possibility of fertilizing commercial orchards by organic means; he mentioned that chemical nitrates are said to be the cause of pear blight. Next day, he sent in a very interesting clipping from the June *Farm Journal* on Northwest fruit growers who diversified by taking on cattle for feeding. The writer says: "Growers finally came to realize that their cash crop yields were slipping, and they needed something more than commercial fertilizer to bring them back."

•

The office has been humming with work on a new booklet entitled *"Organic Fertilizers"* which will discuss the various supplements to compost, from bone meal and cotton seed meal to redwood bark, hardwood ashes, apple pomace, etc. The analysis of all conceivable materials, including even dog manure, will be given according to the most reliable information. This should prove of some help to gardeners all over the country.

•

We know our paper is not very good now; but with the paper needed for the war we just have to hope that after the war we can go back to the good quality which our readers expect. We too like slick and heavier paper better, because beauty is one of the three great aims in our existence: Truth, Goodness, and Beauty.

•

A humorist dropped us a card on which he pokes fun at the insect pests: "Pismires are now infesting my Herbert squash. They climb high into the branches of the plants

and direct menacing looks of a most malicious nature toward me, all the while rubbing their front feet together. Yesterday I thought, I heard one of them say in a very fine voice: 'Let's get his goat.' What can I do about this pestiferous insect which seems likely to undo my mental well-being as well as my 'Vegetable Marrows'?"

•

The June issue of *The Breeder's Gazette*, besides carrying an interesting article on Mr. Truman as cattle breeder, makes an editorial stand for organic consciousness. The splendid column *One Man's Farm* says: "When I stopped to see my neighbor I put in a mild remonstrance—none of my business, really—to their burning up fodder shocks. I said their soil was poor and needed every bit of humus they could plow down."

•

Speaking of the plow, we had one young farmer visit us who had sold his plow. John P. Moyer of Bally, Pa., who has much of his land in potatoes, became a convert not only to soil conservation, but also to Faulkner. He only uses a disk and finds washing of the soil greatly reduced, but yields good.

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The well-known *Industrial Bulletin* of Arthur D. Little, Inc. has a summary of farm production, which in 1942 and 1943 was almost 50% greater than in 1917 and 1918 on about the same acreage. 6,500,000 acres less in corn produced an equal to the record crop in the corn belt.—We should mention here, however, that *such crops take also more out of the soil* and make the return of necessary minerals and organics doubly important.

•

"Good soil makes the best garden, and one of the best soil builders is compost", states a write-up in the *Tyler (Texas) Morning Telegraph* on County Agent M. B. Hill, sent in by our subscriber, Mr. J. C. Stephens. We find more and more indications in the writings of the Department of Agriculture and the Extension men that compost is getting into its own. The mimeographed sheet *Garden Information*, put out by the Department in Washington, recommended, for instance, on May 19, for the growing of tomatoes, cucumbers and summer squash: "Dig a hole roughly the size of a half-bushel basket and fill it half to two-thirds full of compost or other organic material." A bit further down the page the good advice comes: "It is never too early in the season to locate and get control of good mulching material." Nor, we add, is it ever too late.

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Cedric Morris of Detroit, Michigan, came by to take color photographs of the Experimental Farm; he showed splendid ones that he took at Louis Bromfield's place. Mr. Morris is planning for a lecture tour all over the country, and an exceedingly interesting lecturer he should be. While not a farmer, Mr. Morris is wide awake and a splendid speaker. Incidentally, he was born on the Isle of Man, where the cats have no tails. Garden groups and clubs interested in securing a lecture from him might drop us a line and we will relay the request to the speaker.

•

The *Revista del Instituto de Defensa del Cafe de Costarica* is one of the strongest magazines advocating the Sir Albert Howard method of composting. Mariano R. Montealegre frequently writes on methods of soil building. Articles from the pen of Sir Albert Howard and J. I. Rodale were printed there in Spanish translation.

Dr. Warren B. Mack, President of the American Society for Horticultural Science said in a recent address that plants as well as humans suffer from many varieties of hunger; that hungry plants make hungry animals and hungry people; that vast areas of soil in this country have been depleted of nutrients sufficient to produce healthy plants, animals, and men.—You only need look at the lists of real estate advertisers about big New England farms, ten-room houses etc. selling for very little because the land is no longer able to support farming on the former scale *for which the houses were originally built.* With organic methods and proper use of lime, phosphate rock, dolomite, etc., these beautiful regions can be brought back, relieving the stress on the commercial grain farms farther West. In the future, we may need a system of national crop rotation that will allow certain lands to rest a while, bringing others back into productive fertility.

•

Some people scorn the Earthworm, and one of the most untenable statements ever put out by experts, Mr. Faulkner and Mr. Pretzer, broadcasting from WTAM, was that the earthworms ate up part of the truck crops. Apparently earthworms and cutworms were mixed up by the two speakers. Against their rash indictment we have the actual authority of the Connecticut Agricultural Experiment Station. Dr. Lunt and Mr. Jacobson wrote in the November issue of *Soil Science* an authoritative article on earthworm castings. *Yields can be increased by earthworms* everywhere, they say, and their hundreds of analyses of field and forest soils show that the earthworms always left behind more nitrogen than the soils contained. The figures given are so startling that every sensible agriculturist will take notice: If the top layer of the soil contained 4.7 nitrate nitrogen, the casts contained 21.9. The castings contained over ten times more available potassium than the soil. Earthworms rarely draw plants down into their burrows.

•

With the wide interest in dwarf trees and their quick return, questions have come in on what trees to buy. There is only one advice: Go to a reliable nurseryman of your region, because budding on rootstock is a matter of trust and confidence; while J. K. Shaw of the Massachusetts Station gives us a valuable Bulletin on *The Propagation and Identification of Clonal Rootstocks for the Apple,* the average gardener and grower cannot possibly ascertain whether the proper rootstock is being used. The shortage of rootstock, called after the English town of *Malling,* is at present the greatest hindrance to low-priced dwarf trees.

•

How serious soil depletion has become in the South African Union is brought home forcefully by a recent book of Dr. Bennett, U. S. Soil Conservation Service, who was invited to South Africa to advise on methods of restoring the soil and saving the land from what a writer in the *Farmer's Weekly* calls "erosion tantamount to a national disaster of the first magnitude." Sir Albert Howard writes that Dr. Bennett "was much impressed by the humus results he saw." Australia had previously asked the advice of Dr. Bennett, for it too had followed such as disastrous course. In its May 12 issue the *Saturday Evening Post* points out similar problems in the Americas. While it is necessary to keep the far-reaching aspect in mind, we can proudly assert that every compost gardener, every com-

post farmer is doing his part of soil conservation right on his own plot. *Organic gardening is and will more and more become a fundamental principle of soil conservation,* of preserving our land and the future of the people.

"Ran through several batches of compost in the past year; am just now beginning to reap benefits. Looks like I would *need a step-ladder to reach the raspberries* next year," writes J. O. Hammond from Dallas, Texas.

Garden Calendar August-September

Medium temperate zone: Sow lettuce, radish, kale, turnips, spinach for late crop or transplanting as winter crop; sow field salad, put out onion sets for spring use, also a few cloves of garlic.

Sow flowers for spring blooming or winter potting: Larkspur, candytuft, wallflower, pansies, hollyhock, California poppies, delphinium.

Put out bulbs; divide clumps of peony, lily of the valley, primula.

Cut out water sprouts of fruit trees, trim raspberry canes to two or three vigorous ones; fertilize and trim roses; loosen ground around fruit trees and apply compost.

Transplant toward the end of the period and take in frost-endangered plants. The beekeeper draws his honey and unites the weak hives; he feeds those without sufficient honey. The spawning of the fish is over, the young schools of spring spawners are growing, the fall spawners have not yet begun.

Subtropical zone: The time corresponds to a Northern March, and the early vegetables are sown in the open and in cold frames; also the annuals and winter-flowering plants, sweat peas, etc. are sown. Strawberries are set out.

An old Rule:

Many acorns in September
Means snow aplenty in December.

Russian Plant Science

NICOLAI TSITSIN has received wide publicity for his experiments with perennial wheat breeding. He crossed wheat and couch grass and succeeded in extending the realm of wheat into colder climates. Another interesting discovery was that by *A. I. Belov* who collected alfalfa seeds from all over the world at the Tashkent station; he discovered great variety of seed formation and, independently of this, a considerable degree of self-fertility. With the present shortage of alfalfa seed in this country and the incentive payments for seed production, the work of Belov might well be looked into for application in the U. S. A.

Reader's Correspondence

Send stamped self-addressed envelope for reply.

SOME FLORIDA PROBLEMS

Q. Am a new subscriber to your most interesting magazine. Have just read article about Eggplant. How does one prevent it from turning dark after slicing? No one seems to be acquainted with but one or two ways of preparing them —that's why I don't grow them.

Would like to know your opinion as to the use of tobacco stems, in quantity, on citrus grove land. The fertilizer dealer claims that what is included in the fertilizer mixture (which comes from the Virginia-Carolina Chemical Co.), has the nicotine removed.

Do you know of any Seed Company that raises its seeds and plants organically?

What do you think of commercial sheep manure, as a fertilizer for garden crops in general?

Also, what is your opinion of wild ferns and water Hyacinths in compost? There are plenty of hyacinths and crotalaria growing wild here that are said to be high in nitrogen.

Mrs. R. Kiefer,
San Antonio, Fla.

A. Eggplant is usually sliced and weighted down then dipped in batter or flour and fried. It can also be ground up to make a splendid addition to meatloaf. In neither case does its color matter.

Tobacco stems and tobacco dust can be used because they not only deter insects but also supply potassium.

There is no seed company at present that could raise all its seed or plants. Most seeds are raised by contract growers. It would be impossible to find out how much of the seed, if any, is grown organically.

Commercial sheep manure should be alright either in the compost heap or with garden crops, although it cannot take the place of fresh manure in the compost heap.

Water Hyacinths are excellent for composting. In fact, they form part of the green matter which Sir Albert Howard included in his system in India. Wild ferns are apt to make the compost acid unless you counteract that by lime which is especially necessary under Florida conditions.

—o—

LAWNS

Q. I am interested in obtaining information on the subject of organic top dressing for lawns, putting greens and young pine and cypress trees. The greens and lawns have bent grass.

Pat Markovich,
Richmond, Calif.

A. The best organic top dressing for lawns, if you can get it at all, is cottonseed meal which, however, smells bad for a few days. Young pine and cypress trees will do very well with a mulch of peat humus or even peat moss. If you cannot get cottonseed meal, you might resort to some sewage sludge which we do not recommend for food crops but which is quite suitable for lawns and putting greens.

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Trampling Out The Vintage

By Joseph A. Cocannouer

A remarkable book written by a teacher of agriculture who describes farming and gardening in backyard sections of Oklahoma as well as in China and the Philippines. This book will be read with sustained interest by COMPOSTERS. $2.75 Postpaid.

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MAGNESIUM SOURCES

Q. If your experience shows that Magnesium is needed to promote plant growth, Epsom Salts is an easy way for us to get it.

Our soil is heavy clay loam and and we are sprinkling lightly, as our plants appear, a mixture of equal parts of lime, bone meal, and wood ashes. We can easily add Epsom Salts.

Frank B. Stearns,
Chesterland, Ohio

A. Since Epsom Salts is a sulfate, we are not inclined to recommend it whereas Dolomite is so easily obtainable from most firms in the business. The American Limestone Company, Knoxville, Tenn. has a magnesium limestone. The Dolomite Products, Inc., Ocala, Fla. also sells them and the Bethlehem Steel Company, Bethlehem, Penna. has it also available in carload lots. We should advise the use of those on account of the long range effect.

—o—

MILLET

Q. What is millet like? Is it a grain with bran covering like wheat and rye that can be eaten? How is it prepared for food?

R. A. Camp,
Bayonne, N. J.

A. Millet is a grass like other grains, closely related to rice. It is a warm-weather plant and succeeds in dry years also. Usually it is planted around the same time as corn. The seeds are round grains that grow, like rice, on panicles. You have perhaps seen the grains in birdseed.

You can obtain millet seed at any field seed store; in your region, for instance, Stumpp and Walter, New York City. The variety best suited

to human consumption is called German millet or Golden millet.

Millet has as a rule a bitter taste that cannot be fully covered by preparation; the best way of fixing millet is by soaking it over-night and cooking it as a stiff polenta, as a breakfast food, like oatmeal, or by grinding the flour and making it into muffins. We find that brown sugar and cinnamon or ginger greatly improve the eating quality of a millet dish because they hide the somewhat bitter taste. You will find that millet takes rather long to soften, unless previously ground.

Indian or African millet is widely used for human food in the East; it belongs to a different genus and is also known as pearl millet. Then there exist numerous varieties of African as well as German millet, known under such names as Italian, Hungarian, Siberian, Turkestan, etc. millet. It is likely that the bitter taste could be partly bred away; but no major millet enterprise seems to exist at this time in this country.

—o—

FRUIT GROWERS

Q. I have been thinking for a long time if some way could not be worked out for fruit growers to use in some way the tons of brush that is pruned from fruit trees each year and burned. If there would be enough organic matter in brush after all the available wood is taken out to make it profitable to try to work this up in a compost. Also to use with this the waste apples that have too much decay for processing plants.

Do you think anything like this would be practical on a large scale?

David F. Bell,
Waynesboro, Va.

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A. Your suggestion about left over brush is very sound. My father used to cut it up into smaller parts, and it might pay a large orchardist to have a tractor driven machine of the hay cutter type because the cut out brush contains the very elements which are essential for the growth of the trees in the proper proportions. Such a cutter is described in our *forthcoming leaf booklet*. It is made by Mitts and Merrill, Saginaw, Michigan, and in use in Miami, Fla. for cutting up so resistant a material as palm leaves. If brush is burned, all the organic compounds, in other words the work of the trees and the soil in producing these compounds, would have been useless since only the minerals are retained. We advise against burning, and suggest that you get enough livestock to secure the amount of animal matter necessary for making compost on a large scale. It might pay to have chickens or pigeons which produce highly concentrated material.

—o—

STRAWBERRIES

Q. Do you have any information on the planting and cultivation of strawberries?

E. A. FitzPatrick
Canajoharie, N. Y.

A. We grow our strawbe
a straw mulch between
which is gradually abso
the ground. It is nece
strawberries to have a lig
soil. They even like a slig
soil.

In winter, of course, you will have to mulch them in New York State so that they survive, as under natural conditions, when they would be covered with leaves.

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